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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,005	09/27/2001	David F. Craddock	AUS920010491US1	2735

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EXAMINER	
NGUYEN, VAN H	
ART UNIT	PAPER NUMBER
2194	

DATE MAILED: 01/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/965,005	CRADDOCK ET AL.	
	Examiner	Art Unit	
	VAN H. NGUYEN	2194	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

WILLIAM THOMSON
SUPERVISORY PATENT EXAMINER

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-19 are presented for examination.

2. The claimed "A computer program product in a tangible computer readable medium" recited in the preamble of independent claim 11 should read "A computer program product in a tangible computer readable ***storage*** medium" to fit within the four statutory classes of § 101. See, *"Interim guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility"*.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Pettey et al.** (U.S. 6,594,712) in view of **Yuasa et al.** (U.S. 6,085,138).

5. As to claim 1, Pettey teaches the invention substantially as claimed including a method for partitioning a computer network end node (col. 6, lines 14-29), the method comprising:

- virtualizing a plurality of network devices on a single multi-function chip by means of a combination of hardware and software to form network devices (col.6, lines 20-47 and fig.1); and

- virtualizing at least one router on the single multi-function chip by means of a combination of hardware and software to form a router (col.6, lines 22-27 and fig.1), wherein the router performs control-flow processing for the virtual network devices (col. 6, lines 23-38 and figs. 7a-7b);

wherein the network devices and the router form a subnet (col.6, lines 31-38).

Pettey does teach network devices, a router, a subnet, but does not explicitly teach a virtual network devices, a virtual router and a virtual subnet and the virtual router functions of destination lookup and packet forwarding are incurred only on control-flow processing.

Yuasa teaches virtual network devices (see the abstract), a virtual router (col.72, lines 14-30, a virtual subnet (col.39, lines 3-14), and the virtual router functions of destination lookup and packet forwarding are incurred only on control-flow processing (col.39, lines 16-34 and col.72, lines 14-41).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Yuasa and Pettey because Yuasa's teaching would have provided the capability for enabling high speed routing for the intranet. Thus, system costs are drastically decreased and intranet routing performance can be enhanced.

6. As to claim 2, Pettey teaches the virtual network devices are host channel adapters (e.g., host channel adapters; col.6, lines 20-24 and fig.1).

7. As to claim 3, Pettey teaches target channel adapters (e.g., target channel adapter; col.6, lines 55-65 and fig.2).

8. As to claim 4, Pettey teaches further comprising assigning unique identifiers to the network devices (col.11, lines 1-17).

9. As to claim 5, Pettey teaches virtualizing a plurality of subnets on the multi-function chip by means of software (col.6, lines 31-38).

10. As to claim 6, Pettey teaches registering the subnet (col.7, lines 52-65).

11. As to claim 7, Pettey teaches the physical subnet perceives the multi-function chip as only a single router with multiple HCAs residing behind the single router (e.g., IB router and IB HCAs fig.1).

12. As to claim 8, Pettey teaches nodes in the physical subnet communicate with the subnet through the router (fig.1 and associated text).

13. As to claim 9, Pettey teaches the multi-function chip provides resource configuration and allocation interface that allow software, firmware and hardware state machines to set an operating policy for the devices (col.11, lines 37-53 and col.12, line 24-45).

14. As to claim 10, Pettey teaches the multi-function chip provides standard device functions directly to the devices by means of physical queue pairs even though those devices logically reside behind a router (col.10, lines 57-col.11, line 7).

15. As to claims 11-18, note the rejection of claims 1-8 above. It is noted that independent claim 11 does not require "combination of hardware and software".

16. As to claim 19, note the rejection of claim 1 above. It is noted that independent claim 19 does not require "combination of hardware and software".

Response to Arguments

17. Applicant's arguments filed 14 October 2005 have been fully considered but they are not

persuasive.

18. In the remarks, Applicant argued in substance that the devices in Petty are not a plurality of network devices virtualized on a single multi-function chip by means of a combination of hardware and software to form virtual network devices; (b) Petty does not teach virtualizing at least one router on the single multi-function chip by means of a combination of hardware and software to form a virtual router; (c) Petty does not teach the virtual network devices and the virtual router form a virtual subnet; (d) there is no motivation offered in either reference for the alleged combination; and (e) the only motivation...thereby constituting impermissible hindsight reconstruction using Applicants' own disclosure.

19. Examiner respectfully traverses Applicant's remarks.

20. As to point (a), it is noted that Petty and the instant application both relate to an InfiniBand System Area Network. Petty teaches virtualizing a plurality of network devices on a single multi-function chip by means of a combination of hardware and software to form network devices (e.g., see fig.1 and the accompanying text beginning at col.6, line 14). As detailed in the rejection above, Petty is silent on "virtual" network devices. Yuasa is combined to teach "virtual" network devices.

21. As to point (b), Petty teaches virtualizing at least one router on the single multi-function chip by means of a combination of hardware and software to form a router (e.g., see fig.1 and the IB router discussion, beginning at col.6, line 22). Again, Yuasa is combined to teach a "virtual" router.

22. As to point (c), Petty teaches the network devices and the router form a subnet (e.g., see fig.1 and the IB subnet discussion, beginning at col.6, line 31). Again, Yuasa is combined to teach a "virtual" subnet.

23. As to point (d), Examiner notes that the test for the relevance of a cited combination of references is: "whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention," *In re Gorman*, 933 F.2d at 986, 18 USPQ2d at 1888. Subject matter is unpatentable under section 103 if it would have been obvious ... to a person having ordinary skill in the art.' While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or prior art specifically suggest making the combination: *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988)." Such suggestion or motivation to combine prior art teachings can derive solely from the existence of a teaching, which one of ordinary skill in the art would be presumed to know, and the use of that teaching to solve the same [or] similar problem which it addresses. *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979). "In sum, it is off the mark for litigants to argue, as many do, that an invention cannot be held to have been obvious unless a suggestion to combine prior art teachings is found in a specific reference." *In re Oetiker*, 24 USPQ2d 1443 (CAFC 1992).

24. As to point (e), in response to Applicant's argument that the Examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgement on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge

gleaned only from the applicant's disclosure, such a reconstruction is proper. *In re McLaughlin*, 443 F.2d 1392; 170 USPQ 209 (CCPA 1971).

Conclusion

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

26. Any inquiry or a general nature or relating to the status of this application should be directed to the TC 2100 Group receptionist: (571) 272-2100.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VAN H. NGUYEN whose telephone number is (571) 272-3765.

The examiner can normally be reached on Monday-Thursday from 8:30AM - 6:00PM. The examiner can also be reached on alternative Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, WILLIAM THOMSON can be reached at (571) 272-3718.

The fax phone number for the organization where this application or proceeding is assigned is **(571) 273-8300.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to:
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Van H. Nguyen

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SUPERVISORY PATENT EXAMINER